

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* FUTOSHI TANIGAWA, YASUSHI NAKAMURA,  
KOHJI YUASA, and SO KURANAKA

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Appeal 2007-1680  
Application 10/081,087  
Technology Center 1700

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Decided: July 13, 2007

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Before BRADLEY R. GARRIS, CHUNG K. PAK, and  
CHARLES F. WARREN, *Administrative Patent Judges*.

PAK, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the Examiner's final rejection of claims 1 through 4 and 6 through 8, all of the claims pending the above-identified application. We have jurisdiction pursuant to 35 U.S.C. §§ 6 and 134.

*I. APPEALED SUBJECT MATTER*

The subject matter on appeal is directed to a positive electrode material for use in alkaline storage batteries, containing nickel hydroxide and/or nickel oxyhydroxide powder. Details of the appealed subject matter are recited in representative claim 1<sup>1</sup> reproduced below:

1. A positive electrode active material for an alkaline storage battery comprising: at least one selected from the group consisting of a nickel hydroxide powder and a nickel oxyhydroxide powder,

(1) wherein said positive electrode active material has a mean particle circularity from greater than 0.95 to less than 1 as determined by a particle image analysis with a flat sheath flow utilizing hydrodynamics and wherein the number of particles having a circularity of not larger than 0.85 accounts for not more than 5% of the number of total particles within said positive electrode material,

(2) said positive electrode material has a mean particle size from not smaller than 5  $\mu\text{m}$  to not larger than 20  $\mu\text{m}$  on a volume basis,

(3) said positive electrode active material has a specific surface area from not smaller than 5  $\text{m}^2/\text{g}$  to not larger than 20  $\text{m}^2/\text{g}$ , and

(4) at least said nickel hydroxide powder has an X-ray diffraction pattern where a full width at half maximum of a peak attributed to (101) face is from not less than 0.7 deg/2 $\theta$  to not more than 1.2 deg/2 $\theta$  and a ratio of a peak intensity of a peak attributed to (001) face to a peak intensity of a peak attributed to (101) face is not less than 1.1.

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<sup>1</sup> The Appellants do not separately argue the individual claims on appeal (Br.5-15). Therefore, for purposes of this appeal, we decide the propriety of the Examiner's rejections based on claim 1 alone consistent with 37 C.F.R. § 41.37(C)(1)(vii)(2006).

## *II. PRIOR ART*

As evidence of unpatentability of the claimed subject matter, the Examiner has relied upon the following prior art references:

Hayashi	US 6,358,648 B2	May 10, 2002
Kato	US 6,083,642	Jul. 4, 2000

## *III. REJECTION*

The Examiner has rejected the claims on appeal as follows:

1. Claims 1-4, 6-8 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under U.S.C. § 103(a) as obvious over Hayashi; and
2. Claims 1-4, 6-8 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under U.S.C. § 103(a) as obvious over Kato.

## *IV. ISSUES*

1. Does Hayashi or Kato describe a positive electrode active material either identical or virtually identical to that claimed within the meaning of 35 U.S.C. § 102(e)?
2. Would Hayashi or Kato have led a person of ordinary skill in the art to produce a positive electrode material with the claimed circularity specifications within the meaning of 35 U.S.C. § 103?

## *V. ANALYSIS, FACTS, AND CONCLUSIONS OF LAW*

- I. *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977) states in relevant part:

Where. . . the claimed and prior art products are identical or substantially identical, *or* are produced by identical or substantially identical processes, the PTO can require an

applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his claimed product. . . . Whether the rejection is based on "inherency" under 35 U.S.C. § 102, on prima facie obviousness under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products. [Citation omitted; emphasis added.]

*See also In re Spada*, 911 F.2d 705, 708, 15 USPQ 2d 1655, 1658 (Fed. Cir. 1990); *In re Brown*, 459 F.2d 531, 59 CCPA 1036, 173 USPQ 685 (1972).

Here, consistent with the principle taught in *Best*, the Examiner has correctly found that the products and/or processes described in Hayashi and Kato appear to be identical or virtually identical to those claimed and described in the instant application. Hayashi and Kato indeed teach a positive electrode material comprising nickel hydroxide powder which is *spherical* in shape with an average particle size of 10  $\mu\text{m}$  (Hayashi, col. 4, ll. 50-52 and Kato, col. 11, ll. 56-60). According to Kato, the spherical particles having an average particle diameter of 10  $\mu\text{m}$  have the claimed BET specific surface area (e.g., col. 5, ll. 3-5). Hayashi also teaches that uniform crystal growth reduces the amount of disordered crystals which improves the conductivity of nickel hydroxide, which implies that the resulting spherical particles are highly circular (uniform circularity).

In addition to the virtual or identical identity between the claimed and prior art products, both Hayashi and Kato teach processes substantially identical to the claimed process as well. They employ the same overall basic procedure as that claimed: nickel hydroxide is obtained by reacting an aqueous nickel sulfate solution with an aqueous sodium hydroxide solution under overlapping pH conditions. Kato's example 1 also describes the

process by which the pH is controlled during the nickel hydroxide formation process to “deposit *spherical* solid solution nickel hydroxide particles” (col. 11, lines 56-60). Implicit in this teaching of Kato is that pH is an important variable in the production of spherical particles. Hence, the overall evidence of record reveals that the Examiner has demonstrated, by preponderance of evidence, that the prior art and claimed products are either identical or substantially identical. Therefore, it is reasonable for the Examiner to shift the burden to the Appellants to prove otherwise.

The Appellants have not sufficiently demonstrated that the claimed product is patently different from the prior art products. According to the Appellants, their process is distinguished from the prior art processes by the specific adjustment of pH, mixing, and temperature during the nickel hydroxide formation phase, thus forming particles having the claimed circularity, which are materially different the prior art particles (Br. 2). However, the supporting portion (pages 16 and 17) of the Specification proffered by the Appellants does not indicate that the Hayashi or Kato reference does not produce particles of the claimed circularity. In fact, the portion of the Specification relied upon by the Appellants reveals that the mixing condition, temperature, and pH employed are useful in creating the mean particle size taught by the prior art references. In other words, the aspects of the Appellants’ disclosed process which they argue to be unique in producing the claimed particles are actually revealed to be useful in creating the spherical particles material described in the prior art. In any event, the Appellants have not demonstrated that the pH, temperature, and mixing

controlled process described in the Specification is the only way to produce particles of the claimed circularity.

The Appellants are in the best position to provide evidence that the Hayashi and/or Kato product does not possess the invention's claimed circularity, and other parameters. This is particularly true in this situation where the prior art and current inventions have common assigned parties (Matsushita Electric Industrial Co., Ltd). Absent factual evidence showing a patentable difference between the prior art and claimed products, the Appellants have not carried their burden of showing that the claimed product is not anticipated by the prior art.

II. To the extent the products of the prior art and invention are *not* identical or substantially identical, the Examiner's rejection of the claimed invention as obvious in light of Hayashi or Kato is also well-founded. As evidence of obviousness of the claimed subject matter under § 103, the Examiner has again relied on the disclosure of Hayashi or Kato. The Examiner has correctly found that Hayashi and Kato disclose that nickel hydroxide is produced by mixing and stirring nickel sulfate and sodium hydroxide solutions. Furthermore, as indicated *supra*, Hayashi teaches that uniform crystal growth reduces the amount of disordered crystals which improves the conductivity of nickel hydroxide, thus suggesting the desirability of forming highly spherical nickel hydroxide particles (uniform circularity). Similarly, Kato's example 1 also describes the process by which the pH is controlled during the nickel hydroxide formation process to "deposit *spherical* solid solution nickel

hydroxide particles” (col. 11, lines 56-60), thus suggesting the pH control as an important variable in the production of spherical (highly circular) particles.

Given the advantage of forming highly spherical particles and the need to control the pH in forming spherical particles, we concur with the Examiner that a person with ordinary skill in the art would have been led to produce the claimed product using appropriate optimum processing variables within the meaning of 35 U.S.C. § 103. *KSR Int’l v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740-41, 82 USPQ2d 1385, 1396 (2007) *quoting In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336-37 (Fed. Cir. 2006) (“[A]nalysis [of whether the subject matter of a claim is obvious] need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.”); *In re Hoeschele*, 406 F.2d 1403, 1406-07, 160 USPQ 809, 811 (CCPA 1969) (“[I]t is proper to take into account not only specific teachings of the references but also the inferences which one skilled in the art would reasonably be expected to draw therefrom....”).

The Appellants only argue that the mean circularity and circularity distribution of the particles are the reason for the invention’s non-obviousness. (Br. 8). The Appellants allege that the claimed mean circularity and circularity distribution impart unexpected results. (*id.*) In support of their allegation, the Appellants have provided a chart depicting the resultant changes in battery capacity arising from changes in the particle circularity. “It [is] incumbent upon [A]ppellants to submit clear and convincing evidence to support their allegation of an unexpected property.” *In re Heyna*, 360 F.2d 222, 228, 149 USPQ 692, 697 (CCPA 1966); *In re Klosak*, 455 F.2d 1077,

1080, 173 USPQ 14, 16 (CCPA 1972)(“The burden of showing unexpected results rests on [appellant] who asserts them.”)

However, the Appellants fail to carry their burden of showing unexpected results. First, the chart does not give a reliable data set by which the claimed invention can be shown to produce unexpected results. It is well established that experimental results must be significant and practical. *In re D’Ancicco*, 439 F.2d 1244, 1248, 169 USPQ 303, 306 (CCPA 1973). However, the sample data provided does not prove to be statistically significant. Examples 3 and 4 show that increasing the mean particle circularity and decreasing the amount of particles with 0.85 circularity or less actually *decreased* the battery capacity. This not only compromises the trend proffered by the Appellants but also shows that the experimental results may very well be within the margin of error attributable to the experimentation of this type. Thus, we cannot ascertain whether the alleged unexpected results based on the sample data are scientifically supported.

Second, the Appellants fail to compare their results with the closest prior art. *See In re Burckel*, 592 F.2d 1175, 1179, 201 USPQ 67, 71 (CCPA 1979); *In re DeBlauwe*, 736 F.2d 699, 705, 222 USPQ 191, 196 (Fed. Cir. 1984); *In re Baxter Travenol Labs*, 952 F.2d 388, 392, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991). The comparative example provided is one of independent fabrication and does not properly represent the closest prior art. That is, comparative example 1 is not stipulated nor substantiated to be representative of the embodiments described in Hayashi or Kato and, therefore, it does not provide a baseline from which unexpected results can be



judged. That is, the Appellants have not established that the claimed product is unexpectedly superior to the products taught by Hayashi or Kato.

Third, Appellants' offered data is not commensurate in scope with the claimed invention. "Establishing that one (or a small number of) species gives unexpected results is inadequate proof, for it is the view of this court that objective evidence of non-obviousness must be commensurate in scope with the claims which the evidence is offered to support." *In re Greenfield*, 571 F.2d 1185, 1189, 197 USPQ 227, 230 (CCPA 1978); *See also In re Kulling*, 897 F.2d 1147, 1149, 14 USPQ2d 1056, 1058 (Fed. Cir. 1990). While the examples are directed to particles having specific mean circularity and circularity distribution, the claims are not so limited. The Appellants fail to demonstrate that these examples are predictive of all the claimed particles, especially those having varied surface areas, different mean circularity ranges, and different diffraction ratios, including those ingredients not excluded by the claims on appeal. (e.g., Br. 10, Table).

Thus, based on the totality of record, including due consideration of the Appellants' evidence and arguments, we determine that the preponderance of evidence weighs most heavily in favor of obviousness within the meaning of 35 U.S.C. § 103.

#### VI. ORDER

The decision of the Examiner is affirmed.

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Application 10/081,087

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2006).

AFFIRMED

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